

What is claimed is:

1. A universal joint shaft, such as for driving a roll in a rolling mill,
comprising:
a connecting shaft;
5 a first universal joint that is attached to a first end of the connecting shaft;
a second universal joint that is attached to a second end of the connecting shaft;
a coupling sleeve that defines a longitudinal axis and that is connected to the
first universal joint, the coupling sleeve including a receiving bore with an aperture for
receiving a journal of a roll, wherein the receiving bore forms transmitting faces for
10 transmitting torque, and wherein the coupling sleeve includes a cylindrical bore that is
provided in the region of the aperture for supporting the journal against the cylindrical
bore by means of a correspondingly shaped cylindrical outer face, and wherein the
coupling sleeve includes a first conical face that is arranged concentrically relative to
the longitudinal axis and remote from the aperture and which is provided for
15 contacting a correspondingly designed first counter face at the journal of the roll in
order to avoid radial play, as well as means which force-load the first conical face
along the longitudinal axis towards the roll.

2. A universal joint shaft according to claim 1, characterized in that the
20 means that force-load the first conical face along the longitudinal axis towards the roll
are provided in the form of a spring means.

3. A universal joint shaft according to claim 2, characterized in that the
spring means are arranged in a plunging unit of the connecting shaft.

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4. A universal joint shaft according to claim 1, characterized in that there is
provided a centering bore that starts from the receiving bore and is arranged co-axially
relative to the longitudinal axis and which comprises an inner face that conically

widens towards the receiving bore and which contacts a correspondingly designed centering journal of the roll.

5 5. A universal joint shaft according to claim 4, characterized in that the centering bore forms part of a centering ring that is inserted into a cylindrical bore of the coupling sleeve.

10 6. A universal joint shaft according to claim 1, characterized in that in the receiving bore, there is provided a truncated-cone-shaped centering projection that extends co-axially relative to the longitudinal axis and whose outer face is tapered towards the aperture of the receiving bore and is provided for contacting a correspondingly designed inner face of a centering bore of the journal of the roll.

15 7. A universal joint shaft according to claim 6, characterized in that there are provided spring means by means of which the centering projection is loaded towards the journal.

20 8. A universal joint shaft according to claim 6, characterized in that the centering projection includes a base part that is fixed to the coupling sleeve or to the first universal joint and that includes a conical outer face for contacting the counter face, and that the centering projection includes a centering part that, by means of spring means supported against the base part and the centering part, is loaded toward the journal and that includes a conical outer face for contacting the counter face.

25 9. A universal joint shaft for driving a roll in a rolling mill, comprising a connecting shaft;
a first universal joint that is attached to a first end of the connecting shaft;
a second universal joint that is attached to a second end of the connecting shaft;

a coupling sleeve that includes a longitudinal axis, that is connected to the first universal joint, that includes a receiving bore with an aperture for receiving a journal of a roll, wherein the receiving bore forms transmitting faces for transmitting torque, that include a first conical face that is arranged concentrically relative to the longitudinal axis and remote from the aperture and that is provided for contacting a correspondingly designed first counter face at the journal of the roll in order to avoid a radial play, and that includes a second conical face that is provided in the region of the aperture that widens toward the aperture and that is provided for the purpose of contacting a second counter face of the journal, as well as means that force-load the first conical face along the longitudinal axis toward the roll, wherein one of the two conical faces is loaded by spring means towards the respective counter face of the journal, and wherein the spring means are supported, on the one hand, against a component forming the respective conical face and, on the other hand, against the coupling sleeve.

10. A universal joint shaft according to claim 9, characterized in that the second conical face is provided in the form of a ring that is inserted, starting from the aperture, in the receiving bore.

11. A universal joint shaft according to claim 1, characterized in that the first conical face is provided in the form of a closed face arranged around the longitudinal axis.

12. A universal joint shaft for driving a roll in a rolling mill, comprising a connecting shaft;
a first universal joint that is attached to a first end of the connecting shaft;
a second universal joint that is attached to a second end of the connecting shaft;
a coupling sleeve that includes a longitudinal axis, that is connected to the first universal joint, that includes a receiving bore with an aperture for receiving a journal

of a roll, wherein the receiving bore forms transmitting faces for transmitting torque, that includes a first conical face that is arranged concentrically relative to the longitudinal axis, wherein the first conical face is provided for contacting a correspondingly designed first counter face at the journal of the roll in order to avoid a radial play, means that force-load the first conical face along the longitudinal axis toward the roll, wherein the receiving bore, starting from the aperture, is conically tapered towards the first universal joint and forms the first conical face.

13. A universal joint shaft according to claim 9, characterized in that in the first conical face, there are formed two parallel, diametrically opposed, torque transmitting faces.